

NOTES ON THE RANGES AND HABITATS OF SOME
LITTLE-KNOWN AQUATIC BEETLES OF THE
SOUTHEASTERN U.S. (COLEOPTERA:
GYRINIDAE, DYTISCIDAE)

GEORGE W. FOLKERTS AND LOIS A. DONAVAN

Department of Zoology-Entomology,
Auburn University, Auburn, Alabama 36830 and
Department of Biology,
University of Southern Mississippi, Hattiesburg 39401

ABSTRACT

Significant range extensions are reported for *Dineutus robertsi*, *Gyretes iricolor*, *Laccophilus schwarzi*, *Laccophilus undatus*, *Hydroporus dixianus*, *Celina contiger*, *Laccornis deltoides*, *Matus leechi*, and *Hoperius planatus*. Information is included on the habitats of some species, and the distinguishing features of *Celina contiger* are noted.

The scholarly work by Young (1954) on the Floridian fauna has provided a sound basis for further study of aquatic beetles in the Southeast. However, little specific information is available on the aquatic beetle faunas of southeastern states other than Florida.

The information aggregated here has been accumulated over several years of collecting, mainly in Alabama. Specimens from a number of other collections were also examined.

ACKNOWLEDGMENTS

We would like to thank Dr. Paul J. Spangler, U. S. National Museum [USNM]; Dr. Robert E. Woodruff, Florida State Collection of Arthropods [FSCA]; and Miss Francis McAlister for allowing us to examine specimens in their care or contributing information on certain species. Unless otherwise noted, specimens are deposited in the Auburn University Insect Collection [APIC].

Dineutus robertsi Leng

This species was originally described from Rabun County, GEORGIA (Leng, 1911). Leech (1938) reported specimens from Pickens County, SOUTH CAROLINA, and Habersham County, GEORGIA.

This beetle apparently occurs throughout the southeastern U. S. in cool shaded streams above the Fall Line. Although at times it is found with its similar and more common congener, *Dineutus ciliatus* (Forsberg), the 2 species are seldom encountered in the same aggregation.

In the field, they can be differentiated by the difference in ventral pigmentation (*ciliatus* black or reddish-black and *robertsi* brown, reddish-brown, or tan). Leech (1938) noted a difference in the shape of the terminal antennal segment, that of *ciliatus* being blunter. However, one feature emphasized by previous workers, namely the completely bronzed elytra of *robertsi* contrasted

with the lateral bronzed vittae in *ciliatus*, has not been completely reliable or easily discernible in a number of the series we have examined.

In addition to the localities mentioned previously, we have seen specimens of *robertsi* from Oconee County, SOUTH CAROLINA, and Cleburne and Talladega counties, ALABAMA.

Gyretes iricolor Young

This species was described from Holmes County, FLORIDA, where Young (1949) found specimens beneath the overhanging banks of Sandy Creek. By searching in similar situations we found that *iricolor* is quite common in relatively undisturbed sand- and gravel-bottomed streams of the Lower Gulf Coastal Plain east of the Apalachicola-Chattahoochee River. It is most easily located by wading in the streams and finding spots where the bank projects out over the water surface to a distance of 2 dm or more. The surface of the water beneath the overhang must often be vigorously disturbed to wash individuals from their resting sites on twigs or roots (Folkerts and Donovan, 1973).

We examined a total of 140 specimens from Geneva, Covington, Escambia, and Baldwin counties, ALABAMA, and Forrest County, MISSISSIPPI.

Laccophilus schwarzi Fall

Zimmerman (1970), in his excellent revision of the North American *Laccophilus*, referred to *schwarzi* as "the rarest" member of this genus in the U. S. Since it was previously known only from localities in Maryland, Virginia, and the District of Columbia, its presence in relative abundance in northern Alabama is perhaps surprising. Although we have not seen specimens from the intervening areas, the species probably ranges throughout the Piedmont, Blue Ridge, and Ridge and Valley provinces. In Alabama it does not occur below the Fall Line.

The habitat of *L. schwarzi* is unique among the U. S. *Laccophilus*. The species occurs in microhabitats where the stream has undercut the bank, creating an overhang with the undersurface in contact with the water. It can often be found in abundance among the root masses that penetrate through the overhang from the terrestrial bank vegetation above. We have been most successful in collecting *schwarzi* by using a sturdy dipnet to reach beneath the overhang and scrape the undersurface vigorously.

At some sites where damage to the watershed has resulted in increased high flows and decreased low flows, the microhabitat of *schwarzi* may be dry during periods of low rainfall. It can then be found sparsely in other areas in the stream where leaf litter and detritus have accumulated. Fall (1917) stated that Sherman collected *schwarzi* in such situations in Maryland in the fall. However, our experience indicates that such sites are not its preferred microhabitat.

We have examined 103 specimens from the following ALABAMA counties: Cleburne, Lee, Tallapoosa, Walker, Winston.

Laccophilus undatus Aube

Previously (Zimmerman, 1970), this species was known only from localities in the northeastern U. S., from Illinois east to Vermont. Its presence in the mid-South is therefore somewhat unexpected.

We found it to be most abundant in temporary or semi-permanent pools or oxbows formed and isolated by the rise and fall of waters along the edges of streams and rivers. Apparently it occupies somewhat similar habitats in the northern portion of its range. Zimmerman (1970) remarked that, in southern Indiana, *undatus* occurred in "slough ponds in the drainage of a former intermittent stream." A few Alabama specimens were taken in heavily vegetated swamps.

Although most of the specimens available from Alabama and Mississippi are essentially identical with those from the northeastern states, individuals from 2 Alabama localities are much darker, appearing almost black in gross aspect. We attach no taxonomic significance to the darker color in these specimens and provisionally hypothesize that it may relate to pH or other factors of water quality. It is possible that the darker color is typical for southern populations and the lighter individuals are teneral. However, the state of hardness of the exoskeleton of most of the lighter individuals did not indicate a teneral condition.

We examined 26 specimens from Macon and Sumter counties, ALABAMA, and 34 specimens from Lamar County, MISSISSIPPI. The latter locality is only about 70 miles inland from the Gulf of Mexico.

Whether the southern populations represent an isolate, presently disjunct from the northeastern demes, is a matter of conjecture. The lack of specimens from the intervening area may be the result of a lack of collecting. Alternatively, in the upland areas comprising much of the area between the known populations, suitable habitats are probably rare except along the larger watercourses. However, the Mississippi embayment and Atlantic Coastal Plain provide numerous areas where suitable habitats occur. It is possible that *undatus* occurs in one or both of these regions.

Hydroporus dixianus Fall

This species was previously known from Decatur County, GEORGIA, Liberty County, FLORIDA (Young, 1955), and Clarendon County, SOUTH CAROLINA (Kirk, 1969). We recently took 2 specimens of *dixianus* from Line Creek at the Interstate 85 crossing on the Macon-Montgomery county line, ALABAMA. The individuals were obtained among root masses just below water level at the edge of the stream. Subsequent searching has yielded no additional specimens even though a number of different microhabitats were investigated.

This beetle may be widely distributed on the Coastal Plain of the southeastern U. S., but its specific microhabitat requirements seem to make it rare or difficult to find.

Celina contiger Guignot

This species was described on the basis of a single male collected by Blatchley in Pinellas County, FLORIDA (Guignot, 1947). Young (1954) reported no additional specimens.

We took this species in heavily vegetated swamps at several localities in ALABAMA and FLORIDA. At most sites it occurs with other members of the genus. Like *C. grossula* LeConte and *C. slossoni* Mutchler, *C. contiger* burrows in detritus and silt around the bases of rooted aquatic plants and among root masses at the bases of vertical banks. The fact that vigorous scraping of the substrate is often necessary to obtain specimens indicates that *contiger* burrows to considerable depths.

Since *contiger* does not seem to be unusually rare, its apparent absence from collections may be attributable to confusion with *C. angustata* Aube. Some of the confusion results because most specimens of *contiger* are not as small as the 3.0 mm which Guignot listed for the holotype. Our specimens range from 3.0 mm to 3.4 mm in length. Florida specimens are largest, averaging 3.3 mm; Alabama specimens average 3.1 mm. The size range of *contiger* therefore overlaps the size range of *angustata*. In Florida, some specimens of the latter are as small as 3.35 mm, although the average size is 3.5 mm. In more northerly areas *angustata* is larger, averaging about 3.65 mm.

Since size alone cannot always be used to differentiate these 2 species, additional characters are needed. In *angustata*, the prosternal process is comparatively narrow, lanceolate in shape, and bears a prominent anterior protruberance which is angulate when viewed laterally. In *contiger*, the prosternal process is wider, roughly diamond-shaped, with the widest portion anterior to the center. The anterior elevation is lacking.

The eyes of *contiger* are much smaller than those of *angustata*, a feature probably related to its greater burrowing tendencies. When the head of *contiger* is viewed from above, the distance between the eyes averages 6 times the width of an eye. In *angustata*, the mean interocular distance is only 3.7 times the eye width.

Also helpful in identification is the larger, more conspicuous and extensive microreticulation of the ventral surfaces of *contiger*. The pronotal disc of *contiger* is more sparsely and less obviously punctate than in *angustata*. In *contiger*, the terminal segments of the maxillary palpi tend to be blunter than in *angustata*.

As noted in the original description (Guignot, 1947), the male genitalia are also distinctive. The aedeagus of *contiger* possesses lateral flanged teeth about one-fifth the length proximally from the tip. Although not conspicuous, these teeth are easily visible at 90 magnifications. The tip of the aedeagus is rounded and somewhat expanded rather than being bluntly pointed as in *angustata*.

We have examined a total of 26 specimens of *contiger* from Baldwin, Macon, and Montgomery counties, ALABAMA, and from Alachua [FSCA], Dade [FSCA], Highlands [FSCA], and Putnam counties, FLORIDA. The distribution of these localities indicates a probable distribution throughout much of the Coastal Plain of the southeastern U. S.

Laccornis deltoides (Fall)

In the original description of this species, Fall (1923) listed 4 specimens from ILLINOIS. As far as we can determine, no other specimens are known.

We have 1 teneral male from Bullock County, ALABAMA that is almost certainly this species. It fits in all respects the characters listed by Fall (1923) and by Leech (1940). Its size alone (6.6 mm) precludes it from being any of the

other described U. S. species of the genus. An additional specimen [USNM] is available from Calhoun County, FLORIDA. Both individuals were taken from root masses at the edge of small gravel-bottomed streams, suggesting that this is a lotic species.

Matus leechi Young

Young (1953), when describing this species, reported it from Gulf and Liberty counties, FLORIDA. We have recently taken 3 specimens of *M. leechi* at localities in Baldwin and Geneva counties, ALABAMA. The individuals were taken by dipnetting at the bases of edge vegetation in gravel-bottomed streams. The localities reported here suggest that this beetle may have an extensive distribution along the Lower Gulf Coastal Plain.

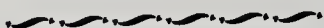
Hoperius planatus Fall

The monotypic genus *Hoperius* was originally described from ARKANSAS (Fall, 1927). Kirk (1969) recorded the species from Florence and Horry counties, SOUTH CAROLINA. Spangler (1973) reported additional localities in ARKANSAS, MARYLAND, and VIRGINIA. The single available ALABAMA specimen was taken at light in Elmore County.

Hoperius is grossly similar in size and shape to a number of other southeastern dytiscids, notably *Rhantus calidus* (Fabricius). Re-examination of series of the latter species and similar ones may yield additional specimens of *Hoperius*.

LITERATURE CITED

- FALL, H. C. 1917. New Dytiscidae. J. New York Ent. Soc. 25:163-182.
 FALL, H. C. 1923. A revision of the North American species of *Hydroporus* and *Agaporus*. John D. Sherman, Jr. Mt. Vernon, New York. 129 p.
 FALL, H. C. 1927. A new genus and species of Dytiscidae. J. New York Ent. Soc. 35:177-178.
 FOLKERTS, G. W., and L. A. DONAVAN. 1973. Resting sites of stream-dwelling gyrenids. Ent. News 84:198-201.
 GUIGNOT, F. 1947. Vingt-deuxieme note sur les Hydrocanthares. Bull. et Ann. Soc. Ent. Belgique 83:221-227.
 KIRK, V. M. 1969. A list of beetles of South Carolina. Part 1, Northern Coastal Plain. S. C. Agr. Exp. Sta. Tech. Bull. 1033:1-124.
 LEECH, H. B. 1938. A new species of *Gyrinus*, with a note on *Dineutus robertsi* Leng. (Coleoptera, Gyrinidae). Canadian Ent. 70:59-61.
 LEECH, H. B. 1940. Description of a new species of *Laccornis*, with a key to the nearctic species. Canadian Ent. 72:122-128.
 LENG, C. W. 1911. A new species of *Dineutes*. J. New York Ent. Soc. 19:11.
 SPANGLER, P. J. 1973. The bionomics, immature stages, and distribution of the rare predacious water beetle, *Hoperius planatus* (Coleoptera: Dytiscidae). Proc. Biol. Soc. Washington 86(36):423-434.
 YOUNG, F. N. 1949. A new species of *Gyretes* from western Florida (Coleoptera: Gyrinidae). Florida Ent. 30:31-33.
 YOUNG, F. N. 1953. Two new species of *Matus*, with a key to the known species and subspecies of the genus (Coleoptera: Dytiscidae). Ann. Ent. Soc. Amer. 46:49-55.

- YOUNG, F. N. 1954. The water beetles of Florida. Univ. of Florida Studies, Biological Science Series. 5(1):ix + 238 p.
- YOUNG, F. N. 1955. The type locality and habitat of *Hydroporus dixianus* Fall (Coleoptera: Dytiscidae). Coleopt. Bull. 9:7-9.
- ZIMMERMAN, J. R. 1970. A taxonomic revision of the aquatic beetle genus *Laccophilus* (Dytiscidae) of North America. Mem. Amer. Ent. Soc. 26:1-275.
- 

PROSOCLITUS BATES A SYNONYM OF
PSEUDACANTHUS KAUP (COLEOPTERA, PASSALIDAE)

PEDRO REYES-CASTILLO

Departamento de Zoología,
Escuela Nacional de Ciencias Biológicas,
I.P.N. México 17, D. F.

In my recent paper on American genera of Passalidae (Reyes-Castillo, 1970:170-174, fig. 77), I revalidated the genus *Prosoclitus* Bates (1886:7) on the basis of the original description and revision of specimens of new species, not yet described, in view of the fact that I could not see specimens of the type species, *P. obesus* Bates.

Recently I had the opportunity to study the type specimen of *P. obesus*, which due to the generic characters it presents must be assigned to *Pseudacanthus* Kaup, and for this reason *Prosoclitus* must pass to synonymy. The specimen studied by Bates has a label with the locality "Mexico" and another one with the identification "*Prosoclitus obesus* Bates". Both labels are hand-written and there is a third label, printed with the following data: "H. W. Bates, Biol. Cent. Amer." This specimen, that belonged to the R. Oberthur collection, has been deposited in the Museum National d'Histoire Naturelle, Paris.

REFERENCES

- BATES, H. W. 1886. Biología Centrali-Americana. Coleoptera, Pectinicornia and Lamellicornia 2(2):1-24, pl. 1.
- REYES-CASTILLO, P. 1970. Coleoptera, Passalidae: morfología y división en grandes grupos: géneros americanos. Folia Ent. Mex. 20-22:1-240; 86 fig.
- 